

Normalization through invariants in n -dimensional Kepler problems

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We present a procedure for the normalization of perturbed Keplerian problems in n dimensions based on Moser regularization of the Kepler problem and the invariants associated to the reduction process. The approach allows us, not only to circumvent the problems introduced by certain classical variables used in the normalization of this kind of problems, but also to do both the normalization and reduction in one step. The technique is introduced for any dimensions and is illustrated for $n = 2, 3$ by relating Moser coordinates with Delaunay-like variables. The theory is applied to the spatial circular restricted three-body problem for the study of the existence of periodic and quasi-periodic solutions of rectilinear type.

This is a joint work with K.R. Meyer and P. Yanguas.